

DOCKET NO.: 292952US0PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: :  
GUILLAUME GAUTIER, ET AL. : EXAMINER: KAO, C.C.G.  
SERIAL NO: 10/586,282 :  
FILED: MARCH 6, 2007 : GROUP ART UNIT: 2882  
FOR: DOPED LITHIUM FLUORIDE :  
MONOCHROMATOR FOR X-RAY  
ANALYSIS

DECLARATION UNDER 37 C.F.R. §1.132

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

I, Philippe DEROUINEAU, hereby declare:

1. In 1985, I received a Master degree (in French "Maîtrise de Chimie" from Université Paris VI, in the field of Inorganic Chemistry. In 1986, I received a "Diplôme d'Etude Approfondie de Chimie Inorganique" degree from Université Paris VI. My studies were directed to the subject of "co doping Dy and Pr of LNA Crystal".
2. I have been employed by Saint-Gobain Cristaux et Détecteurs from 1988 to the present.
3. From 1988 to 1994, I worked as a R&D Engineer for Saint-Gobain Cristaux et Détecteurs (formally Quartz & Silice) in the area of Crystal growth.
4. From 1994 to the present, I have been the Manufacturing Manager of the Optical Crystals Department at Saint-Gobain Cristaux et Détecteurs. My duties as the Manufacturing Manager of the Optical Crystals Department include responsibility for

activities relating to Crystal Growth, Cutting, Polishing and Curvature of Crystals and Control of X Ray Monochromators.

5. I am a named inventor in the above-captioned patent application, of which Saint-Gobain Cristaux et Détecteurs is the assignee. I also familiar with and have worked with the products and methods described in the above-captioned patent application.

6. I am familiar with Lilley, E., "Precipitation in LiF Crystals Doped with  $MgF_2$ ," Journal of Materials Science 2 (1967) 567-582 ("Lilley"), which I understand has been cited against the above-captioned patent application.

7. Lilley discloses that "[i]n order to study the morphology of the metastable phase, replicas were made of a crystal of LiF/0.225 mol%  $MgF_2$ , which had been slowly cooled and was known, from X-ray diffraction observations, to contain the metastable phase but no stable  $MgF_2$ ." See Lilley, page 572. Lilley describes a similar effect in a sample including 0.045 mol%  $MgF_2$ : "this same phase was also formed in slowly cooled crystals containing 0.045 and 0.225 mol%  $MgF_2$ ." See Lilley, page 571. As is evident from the above-quoted passages of Lilley, the crystals of Lilley include an LiF phase and an  $MgF_2$  phase. This structure, including separate LiF and  $MgF_2$  phases, is not a single crystal as recited in claim 45 of the above-captioned patent application.

8. I and/or those under my direct supervision and control carried out the following experimentation. A single crystal of LiF doped with Mg in fluoride form was prepared from a blend of pure LiF and pure  $MgF_2$  powders. The blend was placed in a platinum crucible and then melted by heating. A crystallization operation was then carried out, resulting in a single crystal. The obtained single crystal of LiF doped with Mg in fluoride form was determined to include 0.041 mol Mg/kg, which is clearly within the range recited in claim 45 of the above-captioned patent application. The obtained single crystal of LiF doped with Mg in fluoride form was examined by X-ray diffraction. Examination of the

obtained single crystal of LiF doped with Mg in fluoride form revealed that the single crystal did not include a stable or metastable  $MgF_2$  phase.

9. One of ordinary skill in the art would understand from the teachings of Lilley and the additional experimentation described above that the crystals of Lilley are not single-crystal lithium fluoride doped with a divalent positive ion M present in the fluorinated state, while the crystal of claim 45 of the above-captioned patent application and the crystals described in the specification of the above-captioned patent application are single-crystal lithium fluoride doped with a divalent positive ion M present in the fluorinated state.

10. All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true; these statements were made with the knowledge that willful false statements are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issuing therefrom.

Date:

November 12<sup>th</sup>, 2009

  
Philippe DEROUINEAU